KNOWLEDGE, ATTITUDE AND PRACTICES OF HEALTHCARE WORKERS ABOUT PREVENTION AND CONTROL OF MULTIDRUG-RESISTANT TUBERCULOSIS AT BOTSABELO HOSPITAL MASERU, LESOTHO

BY

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DECLARATION

I, **Dr. Omotayo David Adebanjo** declare that the mini-dissertation hereby submitted to the University of Limpopo, for the degree of **Master of Public Health**, has not previously been submitted by me for a degree at this or any other university; that it is my work in design and execution, and that all material contained herein has been duly acknowledged.

………………………………

Signature

………………………………

Date

DEDICATION

This dissertation is dedicated first and foremost to Almighty God for His grace, provision and protection and for endowing me with wisdom to carry out this project. To Him all glory belongs.

To my late father, Peter Akin Omotayo for sending me to School and for his fatherly guidance.

To my pretty wife, Mrs Temitope Busayo Omotayo for her encouragement, support and above all her constant prayers and incomparable love for me.

To my lovely daughters, Ifeoluwase Oluwajomiloju Omotayo, Ibukunoluwase Oluwafunmito Omotayo and Oluwateniola Erioluwa Omotayo.

To my dear mother, Mrs Alice Ajayi Omotayo for all her efforts and prayers to see that I become somebody in life.

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ABBREVIATIONS AND ACRONYMS

Abbreviations	Meaning
CDC/ATS	Centre for Disease Control/American Thoracic Society
DNA	Deoxyribonucleic Acid
DOTS	Directly Observed Therapy Short-course
GLC	Green Light Committee
GP	General Practitioner
HIV	Human Immunodeficiency Virus
INH	Isoniazid
LMOH	Lesotho Ministry of Health
LNTP	Lesotho National Tuberculosis Program
HCW	Health Care Workers
MDR-TB	Multidrug resistant tuberculosis
PIH	Partners In Health
PP	Private Practitioners
RIF	Rifampicin
TB	Tuberculosis
WHO	World Health Organisation

SUMMARY

Background: Tuberculosis is one of the major public health problems in Lesotho. With the occurrence of multi-drug resistant tuberculosis, little is known about the views of health care workers on this disease. The aim of this study was to investigate the knowledge, attitudes, and practices of healthcare professionals about prevention and control of MDR-TB at Botsabelo hospital, situated in Maseru, Lesotho.

Methods: This study was conducted by means of a semi-structured, anonymous, and self-administered questionnaire that was sent to health care workers. Returned questionnaires were collected through designated boxes stationed at selected places at the study site from 23rd September to 13th October 2010. The investigator and his assistants collected the returned questionnaires on the 15th October 2010.

Results: The results of this study indicate that, overall, less than half (47.3%) of respondents had good level of knowledge about MDR-TB; but the overwhelming majority of them held negative attitude towards patients with MDR-TB. Further analysis showed that the level of knowledge did not affect the attitude towards patients suffering from MDR-TB but it influenced their practices. Having good level of knowledge about MDR-TB was associated with good practices such as the use of protective masks and MDR-TB guidelines and involvement in educating patients about MDR-TB. Moreover, the findings of this study showed also that the attitude of respondents towards patients suffering from MDR-TB did not influence their practices.

Conclusion: In conclusion, less than half of respondents had good level of knowledge about MDR-TB, but over 85.5% of them held negative attitude towards patients suffering from MDR-TB. Although the level of knowledge about MDR-TB was found not to have influenced the attitude of respondents towards patients suffering from MDR-TB; and that

their attitude did not influence practices, good level of knowledge was positively associated with safer practices such as using protective masks, educating patients on MDR-TB, and referring to the MDR-TB guidelines manual. An educational remedial intervention is recommended.

CHAPTER 1: INTRODUCTION

1.1. Introduction

In 2005, the World Health Organization (WHO) Regional Committee for Africa comprising health ministers from 46 Member States declared tuberculosis an emergency in the African region - a response to an epidemic that has more than quadrupled the annual number of new TB cases in most African countries since 1990 and is continuing to rise across the continent, killing more than half a million people every year. The WHO in its Report of 2007 estimated that globally 8.8 million people were infected with TB and 1.6 million people died of TB in 2005. Majority of the infected people i.e. 7.4 million (84%) belonged to Asia and Sub-Saharan Africa. In Lesotho, tuberculosis (TB) has become a major public health concern with the epidemic of HIV which has exacerbated the problem. The country has 637 incident TB cases per 100,000 people in 2006, placing the country 5th among the 15 countries of the world with the highest per capita incidence (WHO, 2009). The case detection rate (new smear positives) for 2008 is 84%. Lesotho has maintained a case detection rate above 80% for the 3 years, but without a corresponding increase in treatment success rate (new smear positives), which is 67% for 2007 as against 72% in 2006. Of the 8744 pulmonary cases, 2175 (25%) were cases diagnosed without smear results (WHO Lesotho, 2008). According to the 2008 TB statistics, 80% of registered TB patients are also co-infected with HIV.

In 2005, 42% of re-treatment cases of TB were defined as relapse cases (LMOH, 2005). Despite adopting the directly observed therapy short-course (DOTS) strategy, cases of multidrug resistant tuberculosis (MDR-TB) have been reported (LMOH, 2005). MDR-TB occurs when drug-resistant strains of TB develop making treatment more difficult and according to WHO/UNION 2008, prior exposure to anti-TB drugs is a well-established risk

factor for drug resistance, as shown from surveys and surveillance systems worldwide. Prior to the launch of the Partners In Health (PIH) MDR-TB project in Lesotho in July 2007, the country lacked the resources to effectively manage MDR-TB. Since the program started, to date about 360 confirmed MDR-TB patients have been enrolled on treatment in a population of about 1.8million people (LNTP, 2009). The incidence of MDR-TB is on the rise. A total of 476 MDRT-B cases were enrolled as at the end of 2008, up from 87 enrolled in 2007. The MDR-TB/HIV co-infection rate is 80% (WHO Lesotho, 2008). In 2008, an estimated 390 000–510 000 cases of MDRTB emerged globally (best estimate, 440 000 cases). Among all incident TB cases globally, 3.6% (95%CI: 3.0–4.4) are estimated to have MDR-TB. Almost 50% of MDR-TB cases worldwide are estimated to occur in China and India with the largest WHO MDR-TB survey reported the highest rates ever of MDR-TB, with peaks of up to 28% of new TB cases in some settings of the former Soviet Union and 150 000 deaths from MDR-TB (WHO TB Report 2010).

1.2. Problem Statement

Because MDR-TB is highly infectious, and contagious, it poses a serious risk to people who came in contact with the patients suffering from it as well as to health care workers (HCWs) who treat them. Although it may be assumed that in general HCWs know about MDR-TB and its implications, several studies from around the globe have found that HCWs do not always exhibit sufficient knowledge, positive attitudes, and acceptable practices regarding preventing and treating MDR-TB (Al-Maniri et al, 2008; Vandan et al, 2009; Kiefer et al, 2009; Loveday et al, 2008; Naidoo et al, 2007; Moloi, 2003). However, no study has been shown to be conducted and published about the knowledge, attitudes, and practices of health care workers who manage MDR-TB patients at Botsabelo Hospital in Maseru, Lesotho. Yet,

health care workers are very important stakeholder in health care delivery and their opinion should be sought on important health issues affecting them. Because MDR-TB can be transmitted to them by patients or vice-versa, it is important to establish their opinions on what they are doing to control the transmission. It is believed that decision-makers and managers at the setting where the study was conducted may consider the expressed opinions and the results of the assessment in order to design and implement relevant interventions.

In this dissertation, the findings of this study are reported, which was conducted in order to describe the knowledge of HCWs about MDR-TB, their attitudes to MDR-TB patients and their practices aimed at managing and controlling the infection.

1.3. Aim of the study

The aim was to investigate the knowledge, attitude, and practices of healthcare professionals about prevention and control of MDR-TB at Botsabelo hospital.

1.4. Objectives of the study

The objectives of this study were:

1. To determine the level of knowledge of HCWs about MDR-TB at Botsabelo hospital

2. To determine the attitude of HCWs toward the MDR-TB patients at Botsabelo hospital

3. To describe the practices of HCWs about MDR-TB at Botsabelo hospital

4. To describe how the level of knowledge and the attitude of HCWs influence practices MDR-TB Botsabelo hospital

1.5. Components of the report

This report is made of six chapters. The first chapter ends here, the other chapters include:

- Chapter 2, which deals with the review of the relevant literature;

- Chapter 3, which describes the methodology employed in the study;

- Chapter 4, which deals with the results of the study;

- Chapter 5, which discusses the results obtained and presented in chapter 4;

- Chapter 6, which presents the conclusions and recommendations from this study

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This chapter discusses the MDR-TB including its prevalence as well as the studies about the knowledge, attitude and practices of healthcare workers towards it. It ends with some concluding remarks.

2.2. What is multidrug resistant tuberculosis?

MDR-TB strains are by definition resistant to the most potent anti-TB drugs (Isoniazid and Rifampicin), making MDR-TB much more difficult and expensive to treat (Weyer, 2005). Globally, almost 9 million new of TB are reported annually (Zager and McNerney, 2008). The emergence of mutated strains of *Mycobacterium tuberculosis* that are resistant to the major anti-TB drugs has seriously hampered the control efforts of TB as MDR-TB has been reported in all the regions of the world (Zager and McNerney, 2008). Coupled with that the treatment of MDR-TB requires prolonged and expensive chemotherapy using second-line drugs which have heightened toxicity. According to Schaaf et al (2009), sub-Saharan Africa has a relatively low prevalence of MDR-TB, but because HIV incidence is so high the incidence of new TB cases is very high, thus the region still accounts for 14% of the global burden of new MDR-TB cases.

Studies have been done around the world on the knowledge, attitudes and practices of HCWs regarding MDR-TB, and these are discussed in the following sections. For the purpose of this study the knowledge, attitudes and practices regarding TB especially concerning infection prevention and control will be used as for MDR-TB.

2.3. Prevalence of Multi-Drug Resistant Tuberculosis

Tuberculosis (TB) was thought to be incurable until the middle of the 20th century. Introduction of anti-TB drugs changed the fate of TB patients as demonstrated by Crofton in 1959 (Sir John Crofton died at the age of 97 on 3 November 2009). However, as Crofton stated, the greatest disaster that can happen to a patient with TB is that the organisms become resistant to two or more of the standard drugs, through selection of mycobacterial mutants that result from spontaneous chromosomal alterations (Crofton, 1959). According to WHO, resistance to tuberculosis drugs is probably present everywhere in the world. Certainly, MDR-TB is present in five continents, a third of the countries surveyed having levels above 2% among new patients. In Latvia 30% of all patients presenting for treatment had MDR-TB. The region of Russia surveyed had 5% of TB patients with MDR-TB. In the Dominican Republic, 10% of TB patients had MDR-TB. In Africa, Ivory Coast has also witnessed the emergence of MDR-TB. Preliminary reports from Asia (India and China) show high levels of drug resistance as well. In the State of Delhi, India, 13% of all TB patients had MDR-TB.

Factors associated with the emergence of multi-drug resistant TB (MDR-TB) and their effects on the epidemiology of TB include inadequate treatment, irregular drug supply, inappropriate regimens and poor patient compliance. Primary resistance to anti-TB drugs occurs when a patient is infected with wild type Mycobacterium TB which is resistant to anti-Tb drugs. Acquired resistance to anti-TB drugs occurs when a patient is infected with susceptible forms of Mycobacterium TB, which become resistant during treatment. Much higher rates of primary resistance have been observed in HIV-infected patients (Urassa et al. 2008).

According to Hattingh et al (2008), the problem of MDR-TB is a cause of great concern and will require revision of the existing control programmes such as early identification of outbreaks by means of rapid testing for drug sensitivity, including methods based on nucleic

acid amplification and the selective DNA finger printing of isolates of *Mycobacterium tuberculosis*.

A total of 23 353 cases of MDR-TB were notified in 2006, of which just over half were in the European Region. Among these notified cases, only the 2 032 cases reported from projects and programmes approved by the Green Light Committee (GLC) were known to have been enrolled on treatment that meets the standards established in WHO guidelines (WHO 2007).

In Myanmar (formerly Burma), institution-based studies carried out in 1994–1995, 2000 and 2002 by the Union Tuberculosis Institute (UTI) at Yangon reported rates of MDR-TB, defined as resistance to minimum isoniazid (INH) and rifampicin (RMP) among new sputum smear-positive TB cases of respectively 3%, 2% and 5% (Ti et al, 2006).

2.4. Level of knowledge of HCWs about MDR-TB

Studies from varied settings indicate that the level of knowledge about TB is influenced by many factors including their areas of work, whether public or private sector. A study conducted in Oman, showed that general practitioners (GPs), particularly those working in the private sector, appear to have low suspicion and poor knowledge of TB in the areas of diagnosis, treatment, follow-ups and contact screening (Al-Maniri et al, 2008). The findings in this study are in agreement with a similar study done in India to assess the doctors' knowledge of TB management, where it was found that although the doctors working in the public sector have better knowledge of TB than the doctors working in the private sector, they all need to be trained for better diagnosis and treatment of TB (Vandan et al, 2009). Also, a Peruvian study to assess the knowledge and attitudes of health care providers such as doctors and nurses, showed knowledge gaps which include identification of patients at high risk for TB, assessment for treatment outcome and consequences of treatment failure (Kiefer et al, 2009).   A related study conducted to assess the level of knowledge and reported practices regarding tuberculosis among health staff at basic health facilities in a rural district

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in Vietnam shows that health staff knowledge of theoretical aspects was better than knowledge related to patient management and even the staff members who had attended TB training courses had inadequate TB inadequate particularly in the area of TB control (Hoa et al., 2005). Also a study carried out in a rural district of Sindh in Pakistan investigating the knowledge, attitude and practices of private practitioners regarding TB management reported similar results; they reported that private practitioners lacked knowledge in TB diagnosis and management. Only 14% of them advised sputum microscopy solely for pulmonary TB diagnosis; while over 40% PPs did not prescribe TB treatment regimen according to TB-DOTS category (Ahmed et al., 2009). The above findings are also in agreement with the results of a Croatian study conducted to investigate TB knowledge among general practitioners (GPs) and paediatricians in Split and Dalmatian County. This study showed gaps in the knowledge among physicians surveyed (Savicević, 2009). However the above findings were in a sharp contrast to the findings from a study conducted in 250 primary health centres throughout Iraq where 95.5% of the 500 health care workers who participated in the study had good knowledge about TB and this was significantly associated with age and job duration (Hashim et al., 2003). A study conducted by Yu et al, (2002) at the St. Luke's Medical Center in Philippines over a period of one month to evaluate the physicians' knowledge, attitudes, and practices and their approach in the diagnosis and management of pulmonary tuberculosis, found gaps in the professionals interviewed. For instance, when faced with MDR-TB, 57.5% stated that they will add 2 drugs to the regimen and re-evaluate; while 15% said that they will add just one drug. A study conducted in Rio de Janeiro showed that only 61/142 (43%) of HCWs who participated in the study were aware of the morbidity and mortality related to MDR-TB.

These knowledge gaps are a huge problem in Africa too. Loveday et al (2008) reported that inadequate knowledge and understanding by clinicians of effective TB diagnosis and

treatment actually led to an increase in MDR-TB. Other findings similar were partly identified in another study conducted in South Africa, where it was stated that lack of training of HCWs, resulted in poor knowledge about MDR-TB, particularly concerning its causation, mode and duration of treatment (Naidoo et al, 2007).

2.5. Attitude of HCWs toward MDR-TB

Attitude of health care workers (HCWs) toward MDR-TB patients can be positive or negative. A Philippine study conducted among selected physicians in a tertiary hospital showed that some of them had positive attitude toward the TB patients. While they did not blame the patients, they considered performing physical examination on these patients as very risky (Yu et al, 2002). This is similar to the findings in a study conducted in New Zealand where it was found that some HCWs had positive attitudes toward their TB patients, and valued and enjoyed working alongside with them even when they are not isolated (Miller, 2007). This same positive attitude was also found in the study carried out in Canada, India and Uganda. However, some medical students went as far as suggesting that measures as isolation for TB patients were too strong (Emili et al., 2002).

However this is in contrast to the negative attitudes found in a similar study conducted in South Africa which showed that HCWs are not supportive of TB patients and subject them to stigmatization, which was associated with high default rate from every form of TB treatment (Holtz et al., 2001).

2.6. HCWs practices regarding MDR-TB

The practices implemented by HCWs in order to prevent cross-infection as well as prescribing practices vary from settings to settings. With regard to prescribing practices, the following studies illustrate the issues. A study conducted in USA to evaluate prescribing

practices for the treatment of TB in Virginia showed that private practitioners were less compliant with the Centre for Disease Control/American Thoracic Society (CDC/ATS) guidelines than their counterparts working in the public sector (Richardson, 2000). The above finding was corroborated by a similar study that was conducted in Britain on mechanisms and management of MDR-TB. It showed that recent outbreaks of MDR-TB were due to bad clinical practices and therefore advocated for good clinical practices to minimize the impact of MDR-TB in the HIV era (Harward et al., 1995). A study conducted at basic health facilities in Vietnam among the health staff showed that the competency related to patient management of tuberculosis patients was low (Hoa et al., 2005) and this was similar to the findings from a study conducted in a rural setting in Shandong Province of centres in Iraq, which showed that 38.2% of the 500 health care workers recruited into the study, handled suspected TB cases correctly (Hashim et al., 2003). However a study report by Gai et al., (2008) showed that the practices of some of village doctors were inappropriate. Finally, a study conducted by Ahmed et al, (2009) reported there was a gross lack of good practices regarding TB management through DOTS among the private practitioners in a rural district Sindh in Pakistan.

With regard to personal protective equipment, a Belgian study done to assess the TB prevention practices showed that only 24% of the personnel wore masks adequate for filtering 1 micron size particles. It was also identified in the same study that the precautionary measures taken to prevent transmission of TB were not sufficient (Ronveaux et al., 1997). A study conducted in Rio de Jainero showed that corrective protective bio-safety norms were reported in only 40% of HCWs surveyed (Oliviera et al, 1993). The finding on the protective bio-safety norms among the HCWs in Rio de Janeiro was in agreement with the finding in another study conducted in South Africa where it was found that the HCWs have poor access to TB/MDR-TB information which includes the procedures that protect them from TB

infection, and also poor management systems for nurses involved in TB treatment (Moloi, 2003).

2.7. Concluding remarks

The above review shows that attitude, knowledge and practices towards TB and MDR-TB vary from settings to settings and they are generally in need for improvement. Though many studies were located, few were about Southern Africa, and none about Lesotho. This gap suggests and highlights the need for this study.

CHAPTER 3: METHODS

3.1. Introduction:

This chapter describes the research design and methodology used in the study, including study objectives, study design, study site, materials, study population, data collection, validity and reliability, and ethical considerations and other things that suppose to be under this chapter. Research methodology is the application of all steps, strategies and procedures for gathering and analysing data in a research investigation in a logical and systematic way (Burns & Grove 2001).

3.2. Study design

According to Burns and Groves (2005), a research design is a blueprint for conducting the study that maximizes control over factors that could interfere with the validity of the findings. The design guides the researcher to plan and implement the study so as to achieve the set goals and is referred to by Polit and Beck (2006) as a "general plan for addressing research questions, including specifications for enhancing the studies' integrity". Green and Thorogood (2004) refer to the research design as "the what, how and why of data production" to answer the research question.

For the purpose of this study since it is determining what is happening in the present a cross-sectional survey based was adopted with a self-administered questionnaire. Cross-sectional studies entail the collection of data from a cross-section of the population, at a given point in time (WHO, 2001). Somekh and Lewin (2005) pointed out that a cross-sectional study involves the collection of quantitative data on at least two variables at one point in time and from a number of cases. The WHO (2001) agrees with the above description but also added that cross-sectional studies provide a prevalent rate at a particular point in time (referred to as point prevalence) or over a period of time (referred to as period prevalence). The researcher

because of its simplicity chose this design, and it is relatively affordable, easier to implement and less-time consuming.

3.3. Study setting

Botsabelo hospital is the only referral hospital for MDR-TB in Lesotho. It is located in Maseru district and serves nine other districts which are described as low and highland districts. It has 24 beds, and offers the following services: taking care of in-patients in the wards, running out-patients clinics including the implementation of special programs such as tuberculosis and MDR-TB management. It also serves as training centre for health care workers who are managing MDR-TB in Lesotho. Other health care workers from other African countries are being sent for training on MDR-TB also at this hospital.

3.4. Study population

The study population comprised of HCWs working at Botsabelo MDR-TB Hospital and the associated MDR-TB team members working in the nine health districts. It includes medical doctors, nurses, pharmacists and the counsellors.

3.5. Sample size

Given the small number of the targeted population, no sampling was done so that all health professionals at the hospital and the MDR-TB team at the district level were included in the study. The total sample was of about 130 healthcare workers.

3.6. Data collection tool and procedures

A self-administered structured questionnaire (see Annex A) was used to collect data. The questionnaire was made available to participants with the help of the heads of the districts MDR-TB team. The questionnaire was already in an envelope for each of the participants. Specially designed collection boxes were placed in designated places in all the districts at the

MDR-TB clinics and at the Botsabelo hospital where respondents dropped the completed questionnaires. The boxes were stationed from 23rd September to 13th October. The investigators or assistants collected the questionnaire on the 15th October 2010.

3.7. Data management and analysis

3.7.1. Procedures and software

All returned questionnaires were individually checked for completeness and numbered. Data were captured into a Microsoft Excel spreadsheet, then imported into STATA 10 and Epi info for data analysis.

Given the types of data collected, both descriptive and inferential statistics were used. For discrete and continuous data, the counts, the measures of central tendency (mean, median and mode), the measures of dispersion (range, standard deviation etc) were calculated; for categorical data, proportions and percentages were determined.

With regard to inferential statistics, cross-tabulation was used in bivariate analysis while logistic regression was used for multivariate analysis in order to assess the association between dependent and independent variables. The level of statistical significance was set at <0.05.

3.7.2. Study variables and parameters

The variables used in the study were assessed as follows:

- Gender: as male and female
- Age: as a discrete data, measured in years, from which descriptive statistics were calculated. Then as a categorical data, based on the median, two categories were created; those over 30 years old; and those younger than 30 years

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- Professional category: four categories were assessed, namely, medical doctors, nurses, pharmacists and counsellors

- Knowledge: level of knowledge was assessed out of 10 questions. The responses were scored of out 10 and then converted to percentage. The questions were about MDR-TB definition, aetiology, diagnosis, symptoms, and treatment. The knowledge level was categorized as good knowledge =those who scored at least 80%; insufficient knowledge =those who scored less than 80%.

- Attitude: attitude was assessed by 7 questions/statements. It was categorized at positive when the respondent scored 3 or less; meaning that the respondents did not blame the patients, traditional medicine for the MDR-TB; did fear that they would be infected by patients as they treat them. Otherwise, it was scored as negative.

- Practices: was assessed based on whether the respondent had a copy of the MDR-TB management guidelines, whether s/he referred to the guidelines, whether they were involved in educating patients on MDR-TB, whether they used their masks when treating MDR-TB patients.

3.8. Reliability

The capturing was done by two data capturers, one reading the other typing. The accuracy of capturing was checked by means of a printout that was cross-checked with the questionnaires by the investigator. The sheet where data were captured was pre-designed by the investigator who set therein validation rules for each variable to prevent the capturing of incorrect data.

3.9. Validity and bias

The tool was pre-tested on a small group of HCWs at a government clinic in order to see if the questionnaire was user-friendly, and how easily the questions were understood. Based on the reactions from the 8 persons used for pre-testing, no changes were made to the

questionnaire. Moreover, there was no sampling, so the risk of selection bias was eliminated. In order to minimize information bias and social desirability bias, the self-administered questionnaire was anonymous.

3.10. Ethical Considerations

In accordance with ethical principles guiding research involving human subjects, this study was conducted only after obtaining approval from the Medunsa Research Ethics Committee (MREC). Permission to administer questionnaires to staff members was also sought and obtained from the Ethics Committee of the Partners-In-Health of Lesotho, and from the administrator of Botsabelo Hospital. As stated earlier, participation was voluntary; no form of coercion was exercised.

CHAPTER 4: RESULTS

4.1. Introduction

In the previous chapter the research design and methodology of this study was described, this chapter presents the findings from the analysis performed. It starts with the description of the sample characteristics, and ends with the presentation of data on the association between knowledge, attitude and practices.

4.2. Sample characteristics

A response rate of 84.6% was achieved as 110 of 130 respondents returned the questionnaires. The mean age of participants was 30.76±6.84 years old. As shown in Fig.1, their age ranged from 20 to 56 years old.
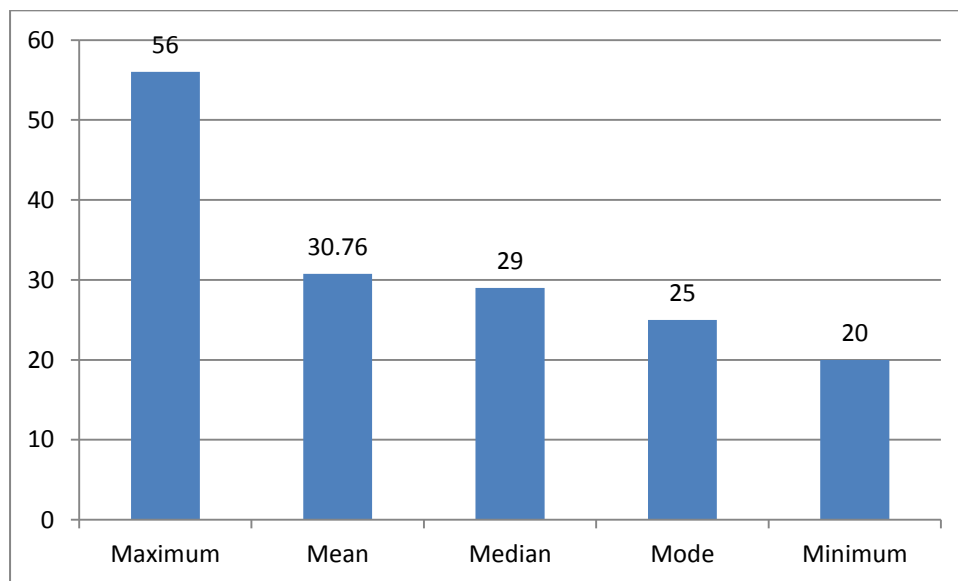
Fig.1: Age parameters of the respondents (n=110)

Based on the median, two age categories were created. Hence, with regard to age category, as shown in Table 4.1, the majority of participants were young adults (20-29 years old), only three respondents were over 50 years old.

Table 4.1: Socio-demographic details of the participants (n=110)

Variables	Frequency	Percent
Age category		
Less than 30 years old	64	58.2
30 and over	46	41.8
Gender		
Male	44	40
Female	66	60
Professional category		
Medical doctors	12	10.9
Nurses	82	74.5
Pharmacists	9	8.2
Counsellors	7	6.4
Work Experience category		
Five years or less	60	54.5
Over 5 years	50	45.5
Marital status		
Single	28	25.5
Married	79	71.8
Divorced	2	1.8
Widowed	1	0.9

As shown in Table 4.1, 60% of the participants are female; all the counsellors who participated were female; nurses constituted the majority of participants (74.5%). More than half (54.5%) of respondents had five years or less working experience. The majority of the participants (71.8%) were married, while 25.5% were single; few were divorced or widowed.

4.3. Knowledge, attitude, and practices about MDR-TB

4.3.1. Knowledge

Overall, 47.3% had good knowledge about MDR-TB based on their answers asked for assessing them. The areas were incorrect answers were given by respondents were about what constitutes MDR-TB, how it diagnosed, and the duration of treatment. As shown in Table 4.2, the level of knowledge varied with age and professional categories.

Table 4.2: Knowledge level of respondents about MDR-TB (n=110)

Variable	Good Knowledge		Insufficient		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Age category						
Less than 30 years	29	45.3	35	54.7	64	100.0
30 and above	23	50.0	23	50.0	46	100.0
Gender						
Male	21	47.7	23	52.3	44	100.0
Female	31	47.0	35	53.0	66	100.0
Professional category						
Doctors	10	**83.3**	2	16.7	12	100.0
Nurses	36	43.9	46	56.1	82	100.0
Pharmacists	4	44.4	5	55.6	9	100.0
Counsellors	2	28.6	5	**71.4**	7	100.0
Work experience category						
5 years or less	29	48.3	31	51.7	60	100.0
Over 5 years	23	46.0	27	54.0	50	100.0

Half of respondents aged over 30 years had good level of knowledge about MDR-TB than their younger counterparts, though the difference was not statistically significant (p=0.63). In contrast, females and those with over 5 years' experience had insufficient level of knowledge than their counterparts; though the difference was also not statistically significant (p>0.05).

On the contrary, the majority (83.5%) of medical doctors had significantly good knowledge about MDR-TB as compared to less than half of respondents among nurses, pharmacists and counsellors (p=0.01)

The mean knowledge score of the participants was 7.4±1.43 out of 10. As shown in Fig. 2, the score ranged between 4 and 10.
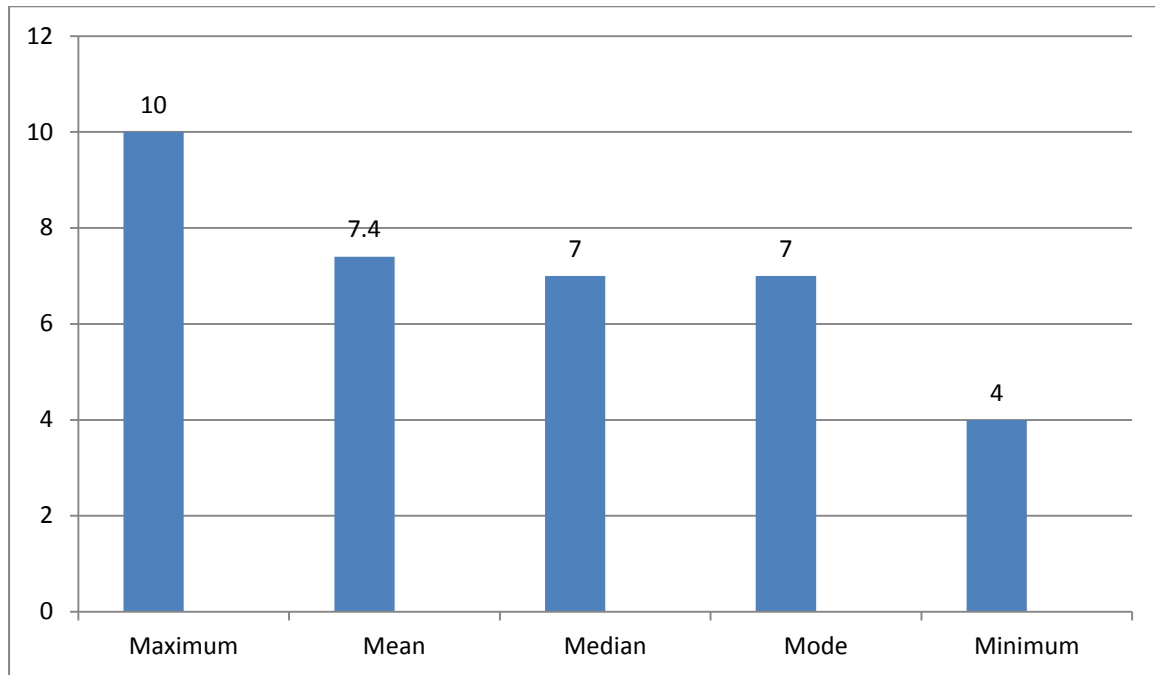
Fig. 2: Knowledge score of the participants (N=110)

4.3.2. Attitude toward MDR-TB patients

The mean attitude score was 4.8±1.07. As shown in Fig.3, the score ranged between 2 and 6.
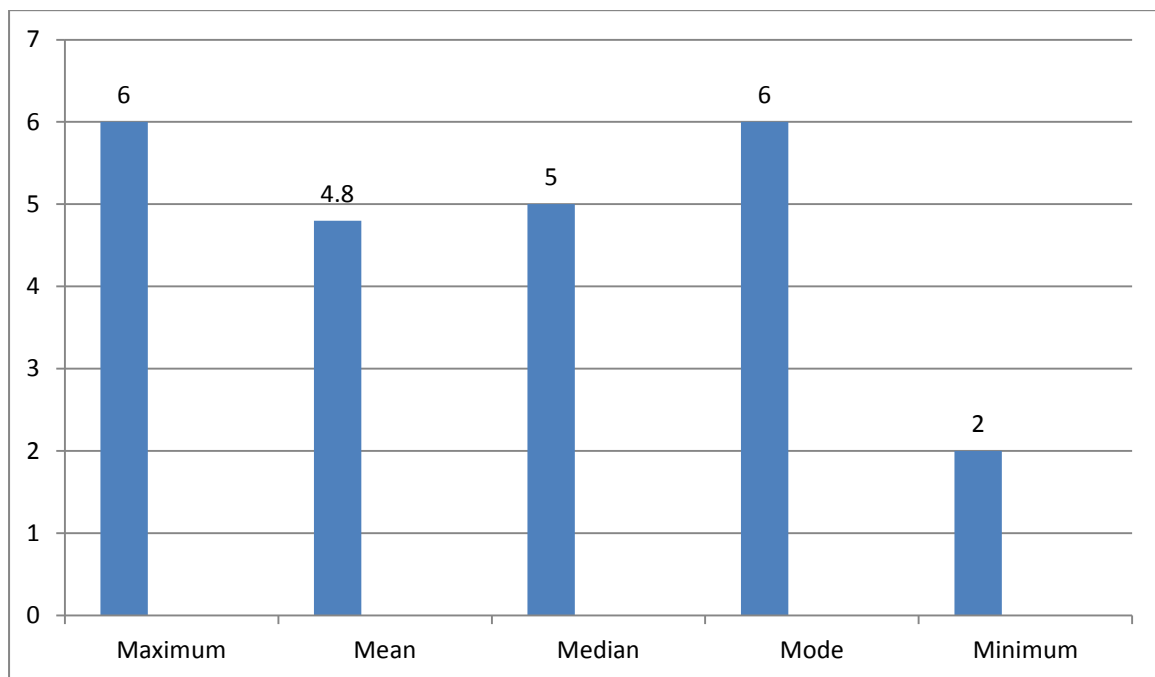

Fig 3: Attitude score of the participants (n=110)

Overall, the majority of respondents had negative attitude towards MDR-TB infected patients, only 14.5% having a positive attitude. This attitude varied with other characteristics of respondents as shown in Table 4.3.

Table 4.3: Attitude of respondents about MDR-TB (n=110)

Variables	Negative Attitude		Positive Attitude		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Age category						
Less than 30 years	55	85.9	9	14.1	64	100
30 years and over	39	84.8	7	15.2	46	100
Gender						
Male	36	81.8	8	18.2	44	100
Female	58	87.9	8	12.1	66	100
Professional category						
Doctors	10	83.3	2	16.7	12	100
Nurses	72	87.8	10	12.2	82	100
Pharmacists	6	60.0	4	**40.0**	10	100
Counsellors	6	85.7	1	14.3	7	100
Work experience category						
5 years or less	52	86.7	8	13.3	60	100
Over 5 years	42	84	8	16	50	100
Knowledge category						
Good knowledge	46	88.5	6	11.5	52	100
Insufficient knowledge	48	82.8	10	17.2	58	100

From the above Table 4.3, it can be seen that although there was no difference with regard to age category, female respondents held more negative attitude than males (87.9% versus 81.8%, p=0.39) but the difference was not statistically significant. In contrast, based on the professional category, more pharmacists (40%) held positive attitude than medical doctors, nurses or counsellors (Chi-square = 1.49; p=0.32) but the difference was also not statistically.

Respondents with more experience held slightly more negative attitude as well as those who had good level of knowledge about MDR-TB but in both cases these differences were not statistically significant (p>0.05).

4.3.3. Practices relating to MDR-TB infection control

Overall, 61.5% of respondents had their own copy of the MDR-TB management guidelines; while 96% of the participants agreed that having MDR-TB guidelines would assist them in managing appropriately MDR-TB patients.

With regard to the practice of use protective masks, Table 4.4 shows the details.

Table 4.4: Use of protective masks by respondents (n=110)

Variables	Used Masks		Did not use Masks		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Age category						
Less than 30 years	55	85.9	9	14.1	64	100
30 years and over	36	78.3	10	21.7	46	100
Gender						
Male	37	84.1	7	15.9	44	100
Female	54	81.8	12	18.2	66	100
Professional category						
Doctors	11	91.7	1	8.3	12	100
Nurses	74	90.2	8	9.8	82	100
Pharmacists	2	22.2	7	**77.8**	9	100
Counsellors	4	57.1	3	**42.9**	7	100
Work experience category						
5 years or less	51	85.0	9	15.0	60	100
Over 5 years	40	80.0	10	20.0	50	100
Knowledge category						
Good knowledge	48	92.3	4	7.7	52	100
Insufficient knowledge	43	74.1	15	**25.9**	58	100
Attitude category						
Negative attitude	79	84.0	15	16.0	94	100
Positive attitude	15	78.9	4	21.1	19	100

Overall, 82.7% of respondents reported that they used the protective masks, N9, when they are in contact with MDR-TB patients. This practice was influenced by the age, gender, the professional category as well as the knowledge level and attitude of respondents as shown in the Table 4.4. Respondents younger than 30 years old, males, and those with negative attitude

wore masks slightly more than their counterparts did, but the difference was not statistically significant. Similarly, respondents with negative attitude practiced the use of masks more than those with positive attitude but the difference was not statistically significant (p=0.58). In contrast, respondents who had good knowledge about MDR-TB significantly wore their protective masks than those with insufficient knowledge (p=0.01).

With regard to educating patients about MDR-TB, overall, 66.4% of respondents stated that they were individually involved in educating patients about MDR-TB. As shown in Table 4.5, this involvement differed with age, gender, and other characteristics.

Table 4.5: Respondents' involvement in educating patients about MDR-TB (n=110)

Variables	Involved in Education		Not involved in education		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Age category						
Less than 30 years	38	59.4	26	**40.6**	64	100.0
More than 30 years	35	76.1	11	23.9	46	100.0
Gender						
Male	27	61.4	17	38.6	44	100.0
Female	46	69.7	20	30.3	66	100.0
Professional category						
Doctors	7	58.3	5	**41.7**	12	100.0
Nurses	57	69.5	25	30.5	82	100.0
Pharmacists	4	**44.4**	5	55.6	9	100.0
Counsellors	5	71.4	2	28.6	7	100.0
Work experience category						
5 years or less	34	56.7	26	**43.3**	60	100.0
More than 5 years	39	78.0	11	22.0	50	100.0
Knowledge category						
Good knowledge	39	75.0	13	25.0	52	100.0
Insufficient knowledge	34	58.6	24	**41.4**	58	100.0
Attitude category						
Negative attitude	62	66.0	32	34.0	94	100.0
Positive attitude	11	68.8	5	31.3	16	100.0

This table shows that respondents who were over 30 years old, female, with more than 5 years of work experience, were more involved in educating patients about MDR-TB.

With regard to the professional category, pharmacists were the least involved as the majority of them (55.6%) reported that they were not involved. In contrast, counsellors were the most involved in educating patients as well as more than 50% of doctors and nurses.

Respondents with good knowledge about MDR-TB were more involved in educating patients about the disease as compared to those with insufficient knowledge (75% versus 58.5%, p=0.07) but the difference between the two groups was not statistically significant. Similarly, those with positive attitude were slightly more involved in educating patients about MDR-TB than those with negative attitude but the difference was not statistically significant (p=0.85).

With regard to referring to the MDR-TB management guidelines manual, overall, 54.6% of respondents reported that they referred to it. This practice varied with some other characteristics of the respondents.

Table 4.6: Reference to MDR-TB Management guidelines by respondents (n=110)

Variables	Refer to guidelines		Do not refer to guidelines		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Age category						
Less than 30 years	34	54.0	29	**46.0**	63	100
More than 30 years	25	55.6	20	44.4	45	100
Gender						
Male	27	62.8	16	37.2	43	100
Female	32	49.2	33	**50.8**	65	100
Professional category						
Doctors	9	75.0	3	25.0	12	100
Nurses	45	56.3	35	43.8	80	100
Pharmacists	5	55.6	4	44.4	9	100
Counsellors	0	**0.0**	7	**100.0**	7	100
Work experience category						
5 years or less	30	50.8	29	**49.2**	59	100
More than 5 years	29	59.2	20	40.8	49	100
Knowledge category						
Good knowledge	33	66.0	17	34.0	50	100
Insufficient knowledge	26	44.8	32	**55.2**	58	100
Attitude category						
Negative attitude	52	56.5	40	43.5	92	100
Positive attitude	7	43.8	9	**56.3**	16	100

Based on the assessed level of knowledge, respondents with good level of knowledge reported that referred to the manual more significantly than those with insufficient level (66% versus 44.8%, p=0.03). In contrast, those with negative attitude referred more to the guidelines manual than those with positive attitude but the difference was not statistically significant (p=0.36).

With regard to other characteristics, respondents older than 30 years, males, and those with more than 5 years of work experience, referred more to the guidelines than their counterparts but the difference was not statistically significant (p>0.05).

Based on the professional category, none of the counsellors referred to the MDR-TB guidelines, but three-quarters of medical doctors reported doing so as well as over 50% of nurses and pharmacists.

4.3.4. Association between knowledge, attitude and practices relating to MDR-TB

Based on the above results, it appears that:

- ➢ The level of knowledge about MDR-TB did not affect the attitude of respondents towards patients with MDR-TB since both those with good and insufficient level of knowledge held negative attitude (88.5% versus 82.8%, p=0.41) as shown in Table 4.3;

- ➢ The level of knowledge about MDR-TB was associated with the use of protective masks. Respondents who had good knowledge about MDR-TB significantly wore their protective masks than those with insufficient knowledge (p=0.01) as shown in Table 4.4;

- ➢ The level of knowledge about MDR-TB influenced the use of the MDR-TB guidelines. Respondents with good level of knowledge reported that referred to the

MDR-TB guidelines manual more significantly than those with insufficient level did (66% versus 44.8%, p=0.03) as shown in Table 4.6;

➢ The level of knowledge about MDR-TB had a little by not significant influence on the involvement of respondents in educating patients about MDR-TB. Respondents with good knowledge about MDR-TB were more involved in educating patients about the disease as compared to those with insufficient knowledge (75% versus 58.5%, p=0.07) as shown in Table 4.5.

➢ The attitude of respondents towards MDR-TB infected patients did not influence their use of protective masks. Respondents with negative attitude practiced the use of masks more than those with positive attitude but the difference was not statistically significant (p=0.58) as shown in Table 4.4;

➢ The attitude of respondents towards MDR-TB infected patients did not influence their involvement in educating patients on MDR-TB. Respondents with positive attitude were slightly more involved in educating patients about MDR-TB than those with negative attitude but the difference was not statistically significant (p=0.85) as shown in Table 4.5;

➢ The attitude of respondents towards MDR-TB infected patients did not influence their practice about the use of the MDR-TB guidelines manual. Those with negative attitude referred more to the guidelines manual than those with positive attitude but the difference was not statistically significant (p=0.36).

CHAPTER 5: DISCUSSION AND LIMITATIONS OF THE STUDY

5.1 Introduction

5.1.1. Demographic distribution

This study showed that the mean age of the participants was 30.76±6.84 years old and the age range was 20 to 56 in Fig 4.1. With regard to age category, as shown in Table 4.1, the majority of participants were young adults (20-29 years old), only three respondents were over 50 years old. These characteristics were slightly similar to the findings by Ahmed et al., 2009 in their own study. Pertaining to the gender participants, as shown in Table 4.1, 60% of the participants were female compared to male participants of 40%. Nurses constituted the majority of participants (74.5%). This was similar to the report by Kiefer et al (2009), in which majority of the participants in their study were also female. The other professional categories were medical doctors (10.9%), pharmacists (8.2%) and the counsellors (6.4%). The finding that the majority of participants were female and nurses is consistent with the distribution of healthcare professionals based on the gender within Lesotho. What is also remarkable is that, although both genders are represented in the professions of medical doctors and pharmacists, it is very rare to find a male counsellor; hence it is not surprising that all the counsellors who participated were female. Reasons for this unbalance are still unknown but need to be investigated.

5.1.2. Knowledge about MDR-TB

Overall, less than half of respondents had good knowledge about tuberculosis, although the mean knowledge score was 7.4 out of total score of 10 as shown in Fig. 2. Some deficiencies in knowledge were found with regard to questions about what constitutes MDR-TB, how it diagnosed, and the duration of its treatment. This finding on the knowledge gaps is similar to

the reports of the studies conducted by other investigators (Al-Maniri et al., 2008; Vandan et al., 2009; Kiefer et al., 2009; Ahmed et al., 2009; Savicevic, 2009).

Based on personal characteristics such as age and gender, this study did not find any statistically significant difference among respondents with regard to their knowledge of MDR-TB. About 54.7% of participants aged less than 30 years had insufficient knowledge about MDR-TB, the corresponding figure in those over 30 years old was 50%. This suggests that increasing age did not contribute to increased knowledge. This was in contrast to Hashim et al (2004) findings where age was significantly associated with good knowledge.

Based on the professional category, the majority of nurses, and pharmacists had less level of knowledge as compared to medical doctors. This disparity was even more pronounced amongst counsellors as 71.4% of them had insufficient knowledge about MDR-TB. These findings concur with reports by other investigators (Kiefer et al., 2009; Hashim et al., 2003); but they raise some concerns in that counsellors who were involved in educating patients about tuberculosis were themselves not so much knowledgeable. Clearly, there is a need for them to be educated on tuberculosis and MDR-TB.

Other important findings are that there was no significant difference in the level of knowledge based on gender or number of years of experience as shown in Table 4.2. As stated earlier, although one would have expected that many years of work experience would translate in higher knowledge level; this was not the case in this study. It might be that the participants with longer years of experience did not see the need to update themselves about new developments on TB/MDR-TB, while their counterparts with less number of years of working experience were still eager to learn about the disease.

Moreover, the fact that less than half of respondents had good knowledge about MDR-TB is disappointing because since the commencement of MDR-TB management in Lesotho in the

year 2007 by Partners-In-Health, an international non-governmental organisation, several training sessions have been conducted for health care workers both in public and private health care facilities.

5.1.3. Attitudes of HCWs toward MDR-TB patients

Findings from this study suggest that there is still too much negative attitude towards patients with MDR-TB, as patients are blamed for having brought this to themselves; 85.5% of respondents had this negative attitude. Yu et al (2002) as well as Holtz et al (2001) have reported similar findings.

It seems that the negative attitude was not significantly influenced by personal characteristics of respondents. There was no difference with regard to age category, but female respondents held more negative attitude than males (87.9% versus 81.8%, p=0.39). Moreover, respondents with more years of work experience held slightly more negative attitude as well as those who had good level of knowledge about MDR-TB but in both cases these differences were not statistically significant (p>0.05).

The professional category of respondents had some influence on their attitude since more pharmacists (40%) held positive attitude than medical doctors, nurses or counsellors (Chi-square = 1.49; p=0.32). This could be explained by the fact that pharmacists may believe that they are at less risk because of the physical barrier, and distance during their interactions between them and patients.

5.1.4. HCWs practices relating to MDR-TB infection control

The guidelines in any country are supposed to guide the users in discharging their duties adequately. From this study, the majority (96%) of the participants agreed that having MDR-TB guidelines will assist them in managing MDR-TB patients. This finding is consistent with reports by other investigators (Richardson, 2000; Harward et al., 1995; Hoa et al., 2005; Gai et al., 2008; Ahmed et al., 2009). However, 61.5% of respondents reported having their own copy of the guidelines. This situation is alarming because guidelines are documents that every healthcare worker should possess in order to ensure quality services. Although no comparative figures on MDR-TB guidelines were found, Zungu et al (2009) reported that 16.5% of Nigerian health care professionals reported owning a copy of the antiretroviral treatment guidelines. This situation needs to be remedied by making the guidelines available to all healthcare workers in Lesotho.

With regard to the practice of using protective masks, overall 82.7% of respondents reported that they used the protective masks, N95 or N100 when they are in contact with MDR-TB patients. This level of practice is acceptable but it would have been better that all health care workers used the protective masks when dealing with MDR-TB patients. This is particularly necessary for pharmacists and counsellors who traditionally are not provided with protective masks. The use of masks was influenced by some personal characteristics. Respondents younger than 30 years old, males, and those with negative attitude wore protective masks slightly more than their counterparts did, but the difference was not statistically significant. Similarly, respondents with negative attitude practiced the use of masks more than those with positive attitude but the difference was not statistically significant (p=0.58). An important finding from this study is that respondents who had good knowledge about MDR-TB significantly wore their protective masks than those with insufficient knowledge (p=0.01).

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The findings from this study are not in agreement with reports by Parmeggiani and co-workers (2010) who reported that HCWs have high knowledge, and positive attitude, reported low compliance concerning standard precautions regarding hospital acquired infections including MDR-TB.

With regard to educating patients about MDR-TB, overall, 66.4% of respondents stated that they were individually involved in educating patients about MDR-TB. This was partially similar to the report by Kiefer et al.(2009). Table 4.5 showed that respondents less than 30 years old, with less than 5 years of work experience, and those with insufficient knowledge were less likely to be involved in educating patients about MDR-TB since at least 40% of them reported not being involved. With regard to the professional category, pharmacists were the least involved as the majority of them (55.6%) reported that they were not involved. It seems that the attitude has some influence in the personal involvement in the education of patients about MDR-TB since 34% of those with negative attitude reported not being involved in the education as opposed to 31.3% of those with positive attitude.

Overall, 54.6% of respondents reported that they referred to the MDR-TB management guidelines. This was similar to the report of Richardson (2000). However, this practice varied with some other characteristics of the respondents. In about or over 50% of respondents, they were likely not to refer to the guidelines. These include respondents who were less than 30 years old, females, those with less than 5 years of work experience, as well as those with insufficient knowledge and positive attitude. Based on the professional category, none of the counsellors stated that they referred to the guidelines, while over 40% of nurses and pharmacists stated that they did not refer to the guidelines. This is worrying because the overwhelming majority of these respondents had stated that guidelines were

needed for them to perform adequately. This finding is consistent with reports by Cabbana and colleagues (1999) who reported that a good number of practitioners fail to comply with clinical practice guidelines. However, it could be that because they did not have their own copy of the guidelines that is why they could not refer to them.

5.1.5. Association between knowledge, attitude and practices relating to MDR-TB

The findings from this study show two scenarios: The first is that the level of knowledge about MDR-TB did not affect the attitude of respondents towards patients with MDR-TB since both those with good and insufficient level of knowledge held negative attitude (88.5% versus 82.8%, p=0.41). On the contrary, having good level of knowledge about MDR-TB was associated with good practices such as the use of protective masks and MDR-TB guidelines and involvement in educating patients about MDR-TB.

The second scenario is that the attitude of respondents towards patients suffering from MDR-TB did not influence their practices. On one hand, respondents with negative attitude practiced the use of protective masks and referred to the MDR-TB guidelines a little more than those with positive attitude, although the difference was not statistically significant in both cases. On the other hand, respondents with positive attitude were slightly more involved in educating patients about MDR-TB than those with negative attitude but the difference was also not statistically significant.

These findings from this study are in stark contrast with reports that hold the view that knowledge shapes attitude, and attitude influences behaviour (Cabana et al., 1999). In this study, knowledge did not seem to have affected significantly the attitude of respondents; and it appears that the attitude did not influence the practices of respondents relating to MDR-TB.

5.2. Limitations of the study

Firstly, the assessment of knowledge level was limited to few questions and did not cover all aspects about tuberculosis and MDR-TB. Similarly, only attitude towards patients with MDR-TB and few practices were assessed.

Secondly, despite a high response rate of over 80%, the sample size of respondents is still small in order to ascertain whether some of the differences reported as not statistically significant could have been significant if the sample was bigger.

Thirdly, given the cross-sectional design employed, it is not possible to establish causal relationships due to the lack of a temporal link.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

The aim was to investigate the knowledge, attitudes, and practices of healthcare professionals about prevention and control of MDR-TB at Botsabelo hospital, situated in Maseru, Lesotho. The results of this study indicate that, overall, less than half (47.3%) of respondents had good level of knowledge about MDR-TB; but the overwhelming majority of them held negative attitude towards patients with MDR-TB. Further analysis showed that the level of knowledge did not affect the attitude towards patients suffering from MDR-TB but it influenced their practices. Having good level of knowledge about MDR-TB was associated with good practices such as the use of protective masks and MDR-TB guidelines and involvement in educating patients about MDR-TB. Moreover, the findings of this study showed also that the attitude of respondents towards patients suffering from MDR-TB did not influence their practices.

The main finding is that, although the level of knowledge about MDR-TB did not influence the attitude of respondents towards patients suffering from MDR-TB; and that their attitude did not influence practices, good knowledge was positively associated with safer practices such as using protective masks, educating patients on MDR-TB, and referring to the MDR-TB guidelines manual.

6.2. Recommendations:

- Given the low level of knowledge about MDR-TB among certain categories of health care professionals, in-service training on the MDR-TB must be provided to all professionals including counselors

- Because at least a quarter of respondents reported not owning a copy of the MDR-TB guidelines manual and about 45% of respondents stated that they did not refer to it, these manuals should be made available to them

6.3. Concluding remarks

In conclusion, less than half of respondents had good level of knowledge about MDR-TB, but over 85.5% of them held negative attitude towards patients suffering from MDR-TB. Although the level of knowledge about MDR-TB was found not to have influenced the attitude of respondents towards patients suffering from MDR-TB; and that their attitude did not influence practices, good level of knowledge was positively associated with safer practices such as using protective masks, educating patients on MDR-TB, and referring to the MDR-TB guidelines manual. An educational remedial intervention is recommended.

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Appendix I

UNIVERSITY OF LIMPOPO
Medunsa Campus

MEDUNSA RESEARCH & ETHICS COMMITTEE

CLEARANCE CERTIFICATE

P O Medunsa
Medunsa
0204
SOUTH AFRICA

MEETING: 05/2010

Tel: 012 - 521 4000
Fax: 012 - 560 0086

PROJECT NUMBER: MREC/H/99/2010: PG

PROJECT :

Title: Knowledge, attitude, and practices of healthcare workers about prevention and control of multi-resistant tuberculosis at Queen Elizabeth II hospital in Maseru Lesotho

Researcher: Dr D Omotayo
Supervisor: Dr N Malangu
Department: Public Health - Epidemiology
School: Health Care Sciences
Degree: MPH

DECISION OF THE COMMITTEE:

MREC approved the project.

DATE: 09 June 2010

PROF GA OGUNBANJO
CHAIRPERSON MREC

Note:	
i)	Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee.
ii)	The budget for the research will be considered separately from the protocol. PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

Appendix II

Partners In Health Lesotho
Bo-Mphato Litšebeletsong tsa Bophelo
Prosperity House, 2nd Floor, 4 Bowker Road, Maseru 100, Lesotho
tel (+266) 2231-2399 · fax (+266) 2231-2394 · www.pih.org

PERMISSION LETTER AND ETHICAL CLEARANCE CERTIFICATE

September 13, 2010

Dr. D.A. Omotayo

P.O.Box 9974

Maseru100

Lesotho

Dear Dr. Omotayo,

Re: Knowledge, attitudes and practices of health care workers about prevention and control of multidrug-resistant tuberculosis at Botsabelo hospital in Maseru, Lesotho.

Reference is made to your letter requesting ethical approval of the above mentioned study.

The organization has reviewed your protocol and hereby authorizes you to conduct this study among the specified population. The study is authorized with the understanding that the protocol will be followed as stated. Departure from the stipulated protocol will constitute a breach of the permission.

Yours faithfully,

Mr. Khotso Hlehlisi

Administrator, Botsabelo Hospital

For PIH Lesotho.

Appendix III

Time- table

Proposal submitted to the lecturers and students	07/2009
Proposal submitted to the supervisor	09/2009
Proposal submitted to MREC	04/2010
Proposal submitted to PIH-Lesotho (MDR-Tb Hospital)	08/2010
Pre-test pilot study	09/2010
Data collection	10/2010
Data analysis	11 & 12/2010
First draft sent to supervisor	01/2011
Submission of final report	03/2011

Appendix IV

Budget:

Pre-test pilot study…………………………R 750
Stationery…………………………………… R 1,750

Transportation………………………………...R 1,850

Printing + Binding + CD…………………..R 3,850

Miscellaneous………………………………R 1,850

Total…………………………………………… R 10,050

Appendix V

Participant declaration

I have read the information on the aim and objectives of the proposed study and was provided the opportunity to ask questions and given adequate time to rethink the issue. The aim and objectives of the study are sufficiently clear to me. I have not been pressurized to participate in any way.

I understand that participation in this Study is completely voluntary. I know that this study has been approved by the Medunsa Campus Research Ethics Committee (MCREC), University of Limpopo (Medunsa Campus). I am fully aware that the results of this study will be used for scientific purposes and may be published. I agree to this, provided my privacy is guaranteed. By completing this questionnaire I hereby give consent to participate in this study.

Questionnaire

Study title:

Knowledge, attitudes and practices of healthcare workers about prevention and control of multidrug-resistant tuberculosis at Botsabelo hospital Maseru, Lesotho

I. Socio-demographic details

1. Your age:………….(years)

2. Gender: (a) Male (b) Female

3. Marital status: 1. Single 2. Married 3. Divorced 4.Widowed

3. What is your profession?

      (a) Medical doctor

      (b) Nurse

      (c) Pharmacist

      (d) Other (Specify):_____

4. Since you graduated, how many years of experience do you have? ………(years)

5. Have you ever been diagnosed of TB? (a) Yes (b) No. If Yes how long ago? ……….

II. Questions about knowledge of MDR-TB

1. What is multidrug-resistant tuberculosis?

    (a) Mycobacterium bacillus resistant to at least isoniazid and rifampicin

    (b) Mycobacterium bacillus resistant to isoniazid and ethambutol

    (c) Mycobacterium bacillus resistant to rifampicin, ethambutol and pyrazinamide

    (d) Mycobacterium bacillus resistant to streptomycin and pyrazinamide

2. MDR-TB is contagious

    (a) Strongly agree

    (b) Agree

    (c) Undecided

    (d) Disagree

    (e) Strongly disagree

3. MDR-TB is cause by

    (a) Mycobacterium tuberculosis

    (b) Streptococcus pneumoniae

    (c) Haemophilus influenza

4. All people with MDR-TB infection have symptoms

    (a) True

    (b) False

    (c) Don't know

5.   What is the most common symptom of MDR-TB?

    (a) Cough

    (b) Loss of weight

    (c) Reduced appetite

6. MDR-TB is diagnosed from sputum smear

(a) True

(b) False

(c) Don't know

7. MDR-TB is diagnosed from drug susceptibility test (DST)

(a) True

(b) False

(c) Don't know

8. The correct way of assessing MDR-TB treatment outcome is through

(a) Sputum

(b) Weight gain

(c) Chest X-ray

9. The duration of treatment for MDR-TB is

(a) 6 months

(b) 9 months

(c) 12 to 16 months

(d) 18 to 24 months

(e) Don't know

10.   MDR-TB is best treated with following drug combination

(a) Parazinamide, Kanamycin, Levofloxacin, Prothionamide, Cycloserine, and Para-amino salicyclic acid (PAS).

(b) Rifampicin, Kanamycin and Levofloxacin only

(c) Kanamycin, Prothionamide and Cycloserine.

III. Questions about the attitude of HCWs toward MDR-TB

1. Most HCWs are afraid that they may contract MDR-TB from the patients

  (a) Strongly agree

  (b) Agree

  (c) Not sure

  (d) Disagree

  (e) Strongly disagree

2. MDR-TB patients caused the problem to themselves

  (a) Strongly agree

  (b) Agree

  (c) Not sure

  (d) Disagree

  (e) Strongly disagree

3. Social and cultural factors constitute treatment barriers

   (a) Strongly agree

  (b) Agree

  (c) Not sure

  (d) Disagree

  (e) Strongly disagree

4. Traditional or alternative medicine makes the treatment of MDR-TB worse.

  (a) Strongly agree

  (b) Agree

  (c) Not sure

  (d) Disagree

  (e) Strongly disagree.

5. MDR-TB cannot be cured no matter the treatment

  (a) Strongly agree

(b) Agree

(c) Not sure

(d) Disagree

(e) Strongly disagree

6. MDR-TB patients should be allowed to die without treatment

(a) Strongly agree

(b) Agree

(c) Not sure

(d) Disagree

(e) Strongly disagree

Questions about practices with regard to the prevention and control of MDR-TB

A. About MDRTB Guidelines

1. Having MDR-TB guidelines will help in the management of the disease

(a) Strongly agree

(b) Agree

(c) Not sure

(d) Disagree

(e) Strongly disagree.

2. Do you have your own copy of the MDR-TB guidelines?

(a) Yes

(b) No

3. How often do you refer to the MDR-TB guidelines?

(a) Always

(b) Frequently

(c) Rarely

(d) Never

About ventilation in the wards

4. Cross-ventilation in a room helps in the infection control

    (a) Strongly agree

    (b) Agree

    (c) Not sure

    (d) Disagree

    (e) Strongly disagree

5. Is cross ventilation implemented in the wards at this hospital?

    (a) Yes

    (b) No

6. If no, have you raised your concerns about this with the management?

    (a) Yes

    (b) No

About patient education about MDR-TB

7. Education of patients and increasing community awareness about MDR-TB is important in the control of the disease.

    (a) Strongly agree

    (b) Agree

    (c) Not sure

    (d) Disagree

    (e) Strongly disagree.

8. Are you personally involved in educating patients or communities about MDR-TB?

(a) Yes

 (b) No

9. Is this hospital educating patients about MDR-TB?

(a) Yes

(b) No

About protective masks

10. Putting on N95 or N100 can reduce the risk of transmission of MDR-TB

(a) Strongly agree

(b) Agree

(c) Not sure

(d) Disagree

(e) Strongly disagree

11. Does this hospital provide you with masks (N95 or N100)?

(a) Yes

(b) No

12. How often do you use them?

(a) Every time I am in MDR-TB wards/clinics

(b) Frequently

(c) Rarely

(d) Never

THANK YOU FOR THE TIME YOU SPARED TO COMPLETE THE QUESTIONNAIRE.